

## A New Species of Gastropod (Fissurellidae, *Fissurisepta*) from the Eastern North Pacific Ocean

BY

IAN McT. COWAN

Faculty of Graduate Studies, The University of British Columbia, Vancouver 8, British Columbia, Canada

(3 Text figures)

*Fissurisepta* SEGUENZA, 1863, IS CUSTOMARILY regarded as a subgenus of the genus *Puncturella*. This designation has been based upon characteristics of the shell, and the living animal seems never to have been described. Recently the discovery of a single living specimen in a dredge haul from 470 fathoms off the west coast of British Columbia not only extends the known distribution of the subgenus into the eastern Pacific Ocean but also permits reexamination of its systematic status on the basis of some soft-parts anatomy.

The type species, *Puncturella (Fissurisepta) papillosa* SEGUENZA, 1863, is known only from the Miocene of Sicily and adjacent regions. A second species of the subgenus, *P. (F.) rostrata* SEGUENZA, 1863, was described from the same deposits. A third species of Miocene occurrence was described as *P. (F.) retula* WOODRING, 1928. His specimens were from Jamaica.

At almost the same time the subgenus was discovered as a fossil it was found in the living fauna off Norway (JEFFREY, 1882) and described as *Puncturella (Fissurisepta) granulosa* JEFFREY, 1882. Subsequent explorations have yielded specimens from several parts of the Atlantic. Thus *P. (F.) acuminata* WATSON, 1833, was taken off North Culebra Island in the West Indies, and again off Yucatan and off Cumberland Island, Georgia. Specimens from the two last localities were described by DALL (1889) as *Fissurisepta triangulata*, a name now regarded as a synonym of *P. (F.) acuminata* (FARFANTE, 1947). This species was collected again off the Azores where it provided the source of yet another apparent synonym *microphyma* DAUTZENBERG & FISCHER, 1927 (FARFANTE, 1947).

A second species from the West Atlantic off Georgia was named by DALL (1927) as *Puncturella tenuicula*. CLARKE (1962) has named a 5<sup>th</sup> species from the Atlantic as *Puncturella (Fissurisepta) agulhasae*.

*Fissurisepta* was unknown in the Pacific until 1951 when KURODA named and described the shell details of *Puncturella (Fissurisepta) soyoae* from Japanese waters. More recently OKUTANI (1964) has reported a second species, *P. (F.) undulata* from the western Pacific Ocean.

The bathymetric range of this creature, with one exception, has extended from 200 fathoms down to 2507 fathoms. The one exception is the Norwegian occurrence at 50 fathoms.

The single specimen from the eastern Pacific appears to differ from other described species and is designated:

*Fissurisepta pacifica* COWAN, spec. nov.

**Description of Holotype:** Shell delicate, white with very thin straw coloured surface pigmentation, conical, with anterior slope slightly convex, and posterior slope slightly concave; foramen somewhat damaged but apparently almost circular and situated slightly behind centre. Sculpture of small pustules widely spaced, nowhere closer to each other than 4 or 5 times their diameters (Figure 3); arranged generally in horizontal rows around the shell, about 6 rows in the height of the shell. On the sides, pustules of adjacent rows arranged so that some diagonal order is apparent, sloping upward toward the anterior end. Interior of shell glossy white, septum thin, straight, transverse, extending obliquely downward at an angle of 20° from the anterior slope for about half the height of the shell; free margin semilunate. Dimensions of shell: length 5.1 mm; width 3.85 mm; height 2.6 mm. Subsequent to the preparation of this description the specimen was broken in transit. The fragments remaining reveal details of surface sculpture but not overall shape, the foramen nor the septum.

The soft parts of the genus have not previously been described.

The soft parts of the posterior segment of the body of our specimen are badly damaged but the portions available for study include the head and the mantle cavity anterior to the heart. Figure 1 illustrates the general features of the head. From the ventral aspect the oral disk is wider than long. There are two pairs of cephalic tentacles, and in the preserved state the anterior pair is thick, blunt and turned down alongside the oral disk. The posterior pair is long and slender. There are no eyes.

The most remarkable feature of the superficial anatomy is that of the ctenidia. Cox (1964, p. 194) states that all Recent species belonging to the suborder Pleurotomariina, with the single exception of the right ctenidium of Scissurellidae, have bipectinate ctenidia. Our specimen

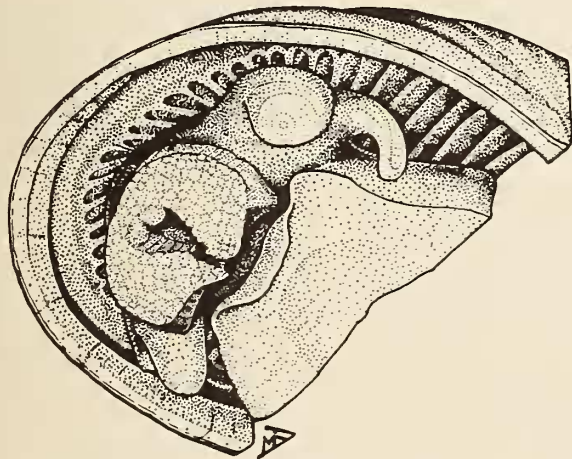


Figure 1

*Fissurisepta pacifica* COWAN, spec. nov.  
Ventre-lateral view of head end.

has disproportionately large gills that occupy almost the entire anterior mantle chamber and both gills are monopectinate (Figure 2). The main axis of each ctenidium is external and it, as well as most of the length of each branchial filament, is fused with or adherent to the mantle. The posterior filaments are free for their terminal thirds. This is thus the only Pleurotomariine known to have symmetrically monopectinate ctenidia. Other distinctive anatomical features should be sought in any fresh specimens that become available.

**Type Material:** A single known specimen number 6522, Cowan Collection, University of British Columbia, will be

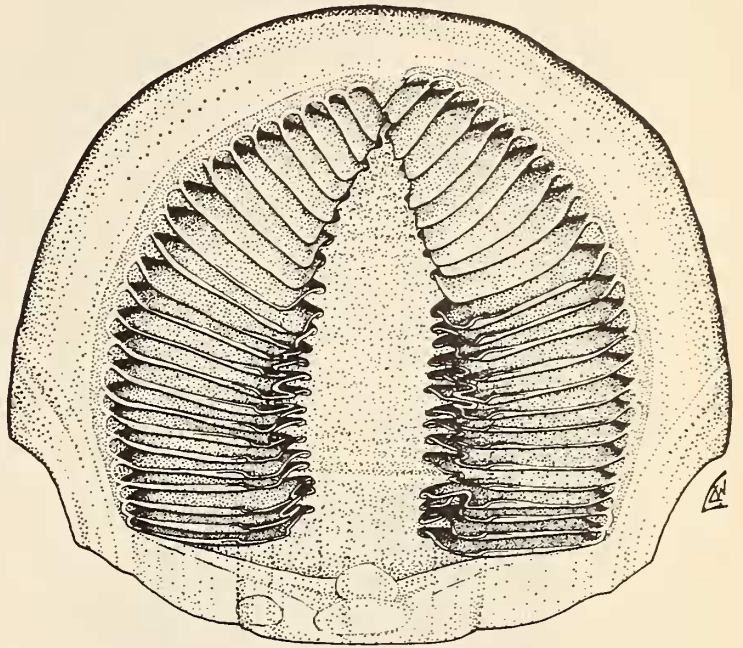


Figure 2

*Fissurisepta pacifica* COWAN, spec. nov.

Dorsal view of anterior third, showing ctenidia as seen through transparent mantle.

deposited in the type collection of the National Museum of Canada as N. M. C. Number 45744.

**Type Locality:** West north west of Triangle Island, British Columbia, 51°09' N Latitude, 130°09' W Longitude, haul number 63-214 of the Fisheries Research Board of Canada, Cowan station 863; 470 - 480 fathoms. Collected by D. B. Quayle, September 11, 1964.

**Discussion:** *Fissurisepta pacifica* is generally similar in shell details to *F. soyoae* KURODA as described and figured by him in 1951. It differs, however, in being relatively flatter, with the height about two thirds of the width rather than equal to it. It differs also in the number and arrangement of the tubercles on the shell, which in *F. soyoae* are shown to be numerous and in well organized rows of closely placed studs arranged obliquely, whereas in *F. pacifica* they are widely separated, few in number and in generally horizontal rows.

This must be a scarce species as just one specimen has been taken at about 30 stations below 200 fathoms worked by us in the past 3 years.

An examination of descriptions of other species hitherto assigned to this subgenus suggests that some detailed re-examination is necessary. The type species *Fissurisepta papillosa* SEGUENZA is known only as a fossil but our species subscribes to the shell details as does *F. soyoae*. *Puncturella (Fissurisepta)* WOODRING, 1928 differs in such essential details of shell structure as thickness, height, external sculpture and in the size of the shelf. It may well be improperly assigned to *Fissurisepta*.

The unique features of the ctenidia of *Fissurisepta pacifica* lead me to conclude that a separate generic designation is necessary to recognize the degree of departure from the characteristics of representatives of *Puncturella*. Accordingly, on the assumption that the other species attributed to the subgenus *Fissurisepta* possess or possessed the same ctenidial structure, I suggest that *Fissurisepta* be accorded generic rank.



Figure 3

*Fissurisepta pacifica* COWAN, spec. nov.  
Surface detail of holotype.

The definition of the genus *Fissurisepta* can be stated: Prosobranch, Zeugobranch gastropods of small size with tall-conical shells in which the aperture is apical. The septum large, about half the height of the shell and passing straight from side to side. External sculpture of the shell variable, consisting of either delicate vertical striae or of minute, widely separated studs in horizontal or oblique rows.

Animal with 2 pairs of cephalic tentacles, the posterior long and slender, no eyes, ctenidia paired, symmetrical and monopectinate, attached for most of their length to the inner surface of the mantle.

All but one of the living and fossil forms described have been taken from the northern oceans. There is, however, a New Zealand Fissurellid, *Puncturella manawatawhia* POWELL, that, from published descriptions seems

closely similar. It would be interesting to study this species in more detail.

## ACKNOWLEDGMENTS

Dr. James H. McLean, Los Angeles County Museum of Natural History assisted with the preliminary identification and provided the photographic figures; the anatomical figures are the work of Margaret Jensen.

## LITERATURE CITED

- CLARKE, ARTHUR H., JR.  
1961. Abyssal mollusks from the South Atlantic Ocean. Bull. Mus. Comp. Zool., Harvard, 125 (12): 345-387; 4 pls.
- COX, LESLIE REGINALD  
1960. Gastropoda/General characteristics of Gastropoda In: R. C. Moore, Treatise on invertebrate paleontology Prt. I, vol. 1: 84-169; figs. 51-88E
- DALL, WILLIAM HEALEY  
1889. Reports on the results of dredging, . . . in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U. S. Coast Survey Steamer "Blake", . . . Report on the Mollusca, pt. 2, Gastropoda and Scaphopoda. Bull. Mus. Comp. Zool. 18 (2): 1-492; pls. 1-40  
1927. Small shells from dredgings off the southeast coast of the United States by the United States Fisheries Steamer "Albatross" in 1885 and 1886. Proc. U. S. Nat. Mus. 70: 1-134
- DAUTZENBERG, PHILIPPE & HENRI FISCHER  
1927. Résultats comparat. scientif. accomplies sur son yacht par Albert 1<sup>er</sup> de Monaco. 77: 224; pl. 7, fig. 16
- FARFANTE, ISABEL PÉREZ  
1947. The genera *Zeidora*, *Nesta*, *Emarginula*, *Rimula*, and *Puncturella* in the Western Atlantic. Johnsonia 2 (24): 93-148
- JEFFREYS, JOHN GWYN  
1882. On Mollusca procured during the "Lightning" and "Porcupine" expeditions, 1867-70 (Part V). Proc. Zool. Soc. London for 1882: 656-687; 2 pls.
- KURODA, TOKUBEI  
1951. Illustrated catalogue of Japanese shells. No. 17: Fissurellidae, p. 116
- OKUTANI, TAKASHI  
1964. Report on the archibenthal and abyssal gastropod Mollusca mainly collected from Sagami Bay and adjacent waters by the R. V. *Soyo-Maru* during the years 1955-1963. Journ. Fac. Sci., Univ. Tokyo, Sec. II, 15 (3): 371-447
- POWELL, ARTHUR WILLIAM BADEN  
1937. New species of marine mollusca from New Zealand. Discovery Repts. 15: 153-222; 11 pls.
- SEGUENZA, G.  
1863. Paleontologia malacologia dei terreni Terziarii del distretto dei Messina . . . Fanuglia Fissurellidi. Amali Accad. Aspir. Naturalisti, Naples, ser. 3, 2: 83-86
- WOODRING, WENDELL PHILLIPS  
1928. Miocene mollusks from Bowden, Jamaica. Part 2: Gastropods and discussion of results. Carnegie Inst. Washington, Publ. 385: i-vii + 1-564; 3 text figs.; pls. 1-40 (28 Nov.)